2F4

LIBRARY
FISH & WILDLIFE SERVICE
PACIFIC OCEANIC FISHERY
INVESTIGATIONS

United States Department of the Interior
Fish and Wildlife Service

Fishery Leaflet 35

Chicago 54, Ill. Reissued November 1945

FISH COOKERY IN THE OPEN

By W. T. Conn

Contents

	Page		Page
Introduction	1	Boiled fish with egg sauce.	14
The cooking fire	1	Boiled fish with Spanish sauce	14
General information about fish	3	Baking whole fish.	14
Fish cookery in a small camp	5	Fish cakes	15
Frying.	5	Creamed fish flakes.	15
Broiling.	5	Fish chowder	16
Boiling	6	Pinebark stew.	16
Baking.	6	Clams.	17
Fireless cooker method	6	Clam bake	17
Baking in the ground	6	Clam chowder.	17
Fish with Spanish sauce	7	Oyster roast	18
Fish chowder.	7	Fish cookery in a camp of 100 people	18
Corning fish for temporary preservation	8	Frying	18
Boiled corned fish.	8	Boiling.	18
Creamed corned fish	8	Boiled fish with egg sauce.	18
Corned fish cakes	8	Boiled fish with Spanish sauce	19
Corned fish stew.	9	Fish chowder	19
Crawfish.	9	Fish cakes	19
Shrimp.	9	Creamed fish flakes.	20
Frog legs	9	Pinebark stew.	20
Crabs	10	Clams.	21
Hard shell crabs	10	Clam bake	21
Soft shell crabs	10	Clam chowder.	21
Clams	10	Oyster roast	21
Clam bake.	11	Appendix - The small fishing camp	
Clam chowder	11	Selection of equipment and supplies	22
Oyster roast.	12	Selection of camp site	23
Fish cookery in a camp of 32 people	12	Making camp.	24
Frying.	12	Literature descriptive of camp life	27
Pan frying	13		
Deep fat frying.	13		
Broiling.	13		
Boiling	13		

FISH COOKERY IN THE OPEN

While certain principles of fish cookery apply to all conditions under which food is prepared for the table, variations in detail are required in outdoor life. A single camper necessarily limits his equipment, supplies, and methods for preparing food. For a party of six or eight, a wider range of activity is possible, yet camp organization and equipment must still be somewhat limited to easily portable or improvised material. For club or community camps, the maintenance of health requires careful organization, supervision, and more or less permanent equipment and construction.

On page 27 of this publication, 15 books are listed which deal with woodcraft, both for the individual camper and for large camps. Because of the lack of publications describing the organization of a camp for a small group, often interested primarily in fishing, certain details pertaining to this recreation are given. It is felt that providing certain comforts of camp life will add to the enjoyment of fishing; and the failure to guard against unnecessary discomfort may spoil a vacation.

THE COOKING FIRE

Unless some type of permanent cooking equipment is available, one of the first duties in camp is to provide for the cooking fire. This should be placed as close to the tents as safety will permit, but should be kept away from trees. See that the ground is cleared of pine needles, or other combustible material that might lead to a forest fire.

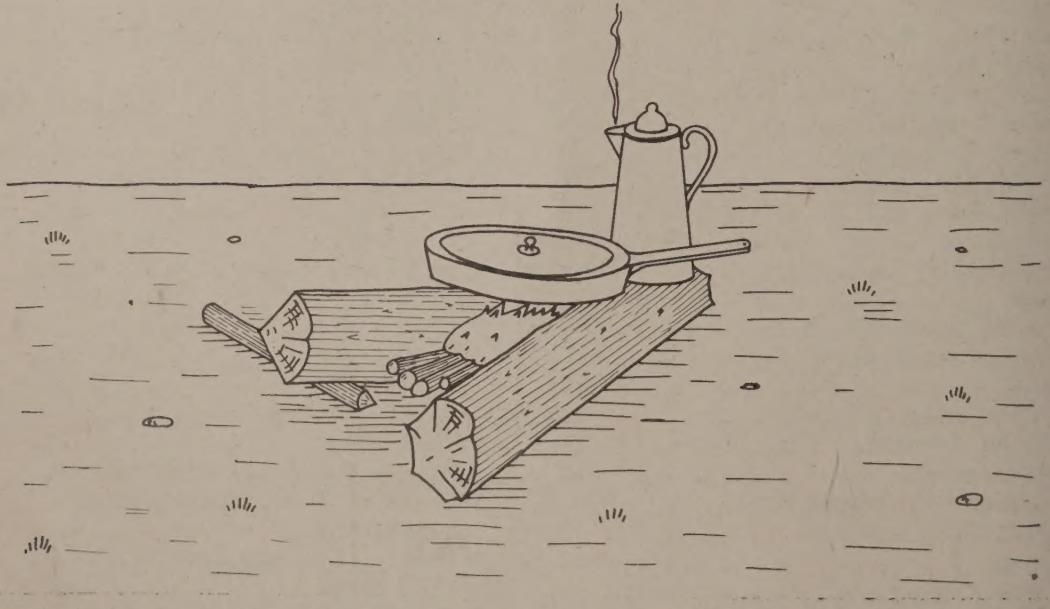

Figure 1. -- Hunter's and trapper's fire.

Temporary.--For temporary use, a "hunter's and trapper's" fire may be provided by selecting two logs of green hardwood, about 3 feet long and 4 to 6 inches in diameter, placing these on the ground in the form of a "V," separated about 12 inches at the open end and about 2 inches at the point. Suitably shaped, dry stones, if conveniently obtainable, may be substituted for the green logs. Any breeze should strike the fire at the open end. For shifting winds, a damper stick under the end of one of the logs can be used. A good supply of small, dry firewood should be available. Cast-iron rods, a folding metal grid, or green sticks may be placed across the logs to support the cooking utensils.

Permanent.--For a permanent fireplace the open-trench construction is usually satisfactory. A round-bottomed trench (dug in the direction of the prevailing breeze) about 3 feet long, 1 foot wide, and 10 inches deep, is excavated, and then lined at the bottom and sides with smooth stones. The end which the breeze will enter should be left open, and the earth sloped away to provide an opening for draft and for adding fuel to the fire. Two 4-inch green hardwood logs are placed parallel and about 8 inches apart along the edges of the trench, at the end opposite the fire opening. A flat rock across the logs will serve for maintaining the heat of a cooked dish. At this end, if desired, a small chimney to provide draft may be built from sod, clay, green wood, or stones.

A folding grid may be used for a permanent fire, with the side supports built of stones. Cooking utensils are supported as on the hunter's and trapper's fire.

General rules.--Fires should be only large enough for the cooking required. For cooking in large camps, it is customary to provide domestic stoves and other equipment.

Only dry stones should be used in fireplace construction; those containing water will split when heated.

No fire should be built where it will damage a growing tree.

Every precaution must be taken to prevent fire from spreading to underbrush.

Except in emergency, cooking should not be started until the flame has subsided and a good bed of live coals is formed.

No fire should be left unguarded. When the fire is no longer needed, the live coals should be drawn and the charred wood saved for adding to future fires.

All smoldering wood or other traces of fire should be extinguished and wet before it is left.

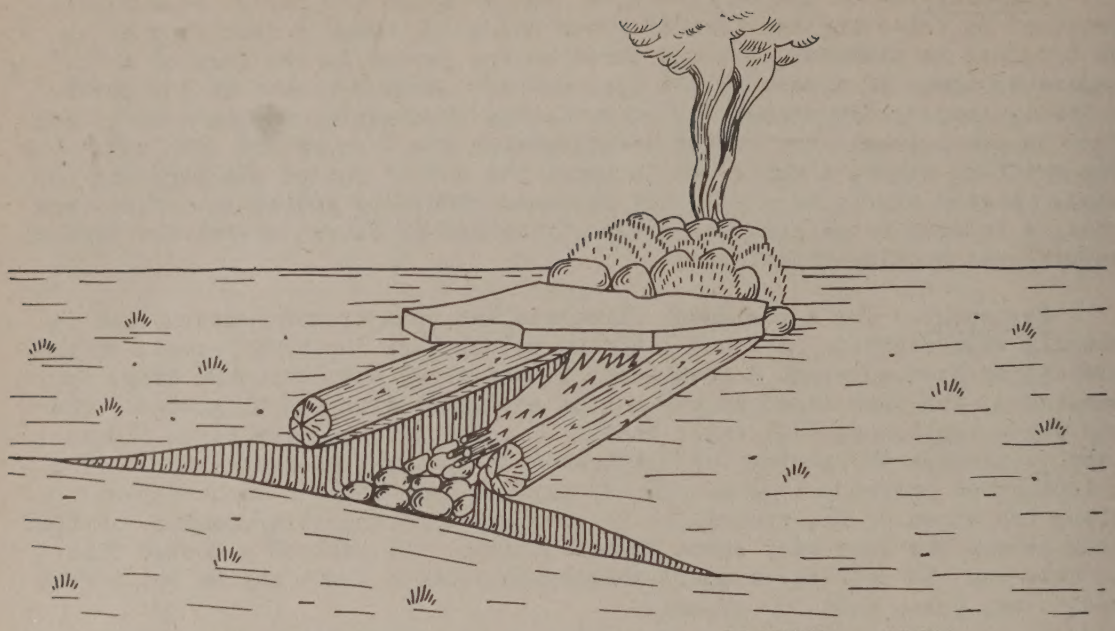

Figure 2.--Open trench fireplace.

General comfort in camp during wet weather will be promoted by stretching a sloping canvas about 6 feet over the cooking fire, and by having in reserve a generous supply of dry firewood.

GENERAL INFORMATION CONCERNING FISH

Because of the tender tissue structure of fish, the flavor may be conserved in cooking by suddenly subjecting the fish to maximum temperature when frying, baking, and boiling. This tends to sear the surface of the fish, thereby retaining the moisture and flavor. When baking fish, the temperature should be lowered after the first few minutes.

There is a widespread misbelief that any combination of seafood and milk or milk products (ice cream, for example) is dangerous to health. When one considers the combination of lobster and milk in the popular lobster stew of New England, the fallacy of this idea is apparent. The normal person need have no fear of combining seafood with milk if each of these foods is strictly fresh.

To prevent any odor of raw fish clinging to the hands, thoroughly chill them in cold water before touching the fish. Cleanse the hands by washing them with hot water and salt without soap. After rinsing off the salt, wash with soap and water. A strong, hot solution of salt in water (without soap) will remove any such odor from dishes, also.

Fish should be dressed as soon as possible after being caught; the kidney under the backbone should be carefully brushed out; and, at all times, fish should be protected from exposure to sun and wind. By dressing the fish at the place where they are taken, food is provided for wildlife and the camp grounds are kept clean. After dressing, the fish may be packed in wet grass. They should be kept as cool as possible, and not stored for more than a few hours unless preserved by salting (see page 8).

A fillet of fish is the meat, cut lengthwise, and separated from the backbone. If desired, the skin, with scales removed, may be left on the fillet. It is not customary to fillet fish which weigh less than 1-1/2 pounds; smaller fish may be split, preferably through the back.

Nearly all kinds of fish may be fried; this is the most common method of cooking in camp and is especially adapted to the quick preparation of morning and noon meals.

Following is a list of fishes most commonly available in camp, classified as to "lean" or "fat." (Many species have local names, a few of which appear in parentheses. Methods for preparing these fishes will be found listed in the table of contents.)

Species	Lean or fat	Species	Lean of fat
Black bass	lean	Rockfish (rockcod)	fat
Bluefish	lean	Sea bass	fat
Blue pike (jack salmon)	lean	Sheepshead (river drum, gaspergou)	lean
Bream (bluegill)	lean	Spot (Cape May goodie)	lean
Brook or rainbow trout	lean	Spotted trout	lean
Catfish	lean	Striped bass (rock)	fat
Crappie	lean	Sunfish	lean
Croaker (hard head)	lean	Weakfish (gray trout, sea trout)	lean
Cunner	lean	White bass	lean
Drum, red (red fish, channel bass)	lean	White perch	lean
Eel	fat	Yellow perch	lean
Flounder	lean	Yellow pike	lean
Lake trout	fat		
Pike (pickerel)	lean		

A few kinds of fresh-water fishes, especially in summer, will have a "muddy" flavor if prepared in the ordinary way. Much of this objectionable taste is in the skin. These fishes may be greatly improved by skinning, and soaking in salted water overnight.

If the materials are available, a more effective treatment is to cover the skinned and split fish with the following mixture:

1 cup salt
1 cup crushed onion
2 tablespoons vinegar
1 teaspoon black pepper
1/8 teaspoon mace

After one hour, the mixture is washed off and discarded. Fish prepared in this way will seldom require further seasoning, except when boiled.

FISH COOKERY IN THE SMALL CAMP

The following recipes are disigned for preparation with limited facilities, and to provide generous portions for 6 servings:

Frying

Many people prefer to skin all fat fish before frying. This can be done most easily by plunging the fish into boiling water, and letting it remain 20 to 30 second after boiling starts again. The fish is then lifted from the water, and the skin rubbed off at once.

The following crumbing material is suggested for 3 pounds of fillets or 4½ pounds of dressed fish:

3/4 cup cornmeal and flour, equal parts
1-1/3 tablespoon salt

Mix the cornmeal, flour, and salt as thoroughly as possible. Cut the fish into serving portions (if necessary), dip in water, and cover well with the salt-meal-flour mixture. Put about 4 tablespoons cooking oil (or other clear fat) into the pan and heat until hot but not smoking. Place the fish in a single layer in the pan. Cover the pan if possible and cook 5 minutes; turn fish and cook until done.

Broiling

If fish are to be broiled, a fire or live coals from hardwood free from flame and smoke, should be available.

3 pounds fillets or 4-1/2 pounds dressed fish
2 tablespoons salt dissolved in 1 cup water
1/4 teaspoon pepper mixed into 1/4 cup cooking oil

Cut fish (if necessary) into serving portions, and soak in the salt solution from 2 to 6 minutes, depending on thickness of the fish. Drain, and brush each piece thoroughly with the prepared oil. A folding grill or broiler is almost essential if one member of the party is doing all the cooking. Individuals may broil fish by impaling each piece on a forked stick of green wood with the tips well sharpened. The skin side of the fish should be held toward the heat at such a distance that the skin will be well browned in 5 to 8 minutes. The fish is turned and cooked similarly on the other side. Basting several times with the seasoned oil will improve the flavor.

Boiling

Lean fish will be found more satisfactory for boiling.

3 pounds fillets or 4-1/2 pounds dressed fish
3 tablespoons salt and 6 tablespoons vinegar in 2 quarts boiling water

Place the fish in the boiling water and cook for 8 to 12 minutes or until tender; remove and drain. The fish may be handled more easily if wrapped and tied in cheesecloth. Serve with a white sauce prepared as follows: Heat 1/4 cup butter (or cooking oil), then stir in 4 tablespoons flour, 1/2 teaspoons salt, and 1/4 teaspoon pepper until the whole is smooth; then stir in gradually, 1 pint warm milk continuing the stirring until the sauce is smooth. Chopped hard boiled eggs, grated cheese, or finely chopped onion, may be added as desired.

Baking

Fireless cooker method

4 pounds dressed fish, split if large
3 tablespoons salt
3/8 teaspoon pepper
3/8 cup minced onion (with the juice)
3/8 cup cooking oil

Have heater stone of the fireless cooker hot. Put fish in lower kettle. Pour the seasoning and oil over the fish. Heat kettle over fire and place stone and kettle in cooker. If upper kettle is not in use for cooking, fill it with boiling water. Cook fish one hour. Pour juices over fish when serving.

Baking in the ground

Four pounds or more of large fish should be cleared of gills and viscera, but head, tail, fins, and scales may be left on. Lean fish

should have three cuts across the skin on both sides. About 2 teaspoons salt and 3/8 teaspoon pepper should be well spread on the inside of the body cavity. A few thin strips of bacon or salt pork may replace the salt and a few thin slices of onion added, if desired. Dig a trench about 10 inches deep and of equal width and long enough to hold the fish. In this hole build a fire, adding wood until about 2 inches of coals are formed. Remove all flaming wood and about half of the hot coals. Smooth out the remaining coals and cover with green grass 1-inch deep. On this, place the fish and cover with another inch layer of grass, then add the remaining live coals. Cover with warm earth from around the edges of the hole. At the end of one hour, the fish will be done and should be carefully removed. The flesh may then be separated easily from the inedible portions.

Fish with Spanish sauce

Prepare flesh of lean fish by boiling dressed fish for about five minutes in acidulated, salted water, as described above. Separate the flesh from skin, and ALL bones.

3 cups cooked fish
2 cups sliced onions
2 cups canned tomatoes
2 teaspoons salt
2 teaspoons sugar
1/2 teaspoon pepper
1/4 cup cooking oil

Simmer all ingredients (except the fish) for about 30 minutes or until the onions are almost done. Stir, and add the fish without breaking up the meat more than necessary. Cook about 10 minutes longer.

Fish chowder

3 pounds lean fish, cleaned, scaled, and beheaded
3 cups sliced potatoes
2/3 cup sliced onions
2/3 cup diced salt pork
1 quart milk
2 tablespoons flour
2 teaspoons salt
1/4 teaspoon pepper
2 cups water

Dried whole milk or 2 cups of evaporated milk and 2 cups of water.

In a kettle of at least 1 gallon capacity, fry the pork to a golden brown, add the onions and fry to a light yellow and stir in the flour. Then add the potatoes, seasoning and water, stirring well. Lay the fish on top and cook about 5 minutes or until flesh can be separated from bones and skin. Lift the fish carefully, separate flesh from skin, fins, and ALL bones. Return clear flesh to kettle, stir just enough to mix with potatoes and cook until the latter are soft. Add warm (but not boiled) milk. Add hard crackers just before serving. To vary, substitute 4 cups of stewed tomatoes for 1 quart of milk.

If desired, the chowder may be prepared in a fireless cooker, allowing about 1 hour for the potatoes to cook. The potatoes will darken slightly but this does not affect their taste.

CORNING FISH FOR TEMPORARY PRESERVATION

This is the simplest method of preserving surplus fish for a day or two. Scale, clean, and trim the fish; small fish may be split through the back, larger ones split into halves or filleted. The sides of flesh should not be more than one-inch thick. Wash the fish, drain, and cover all surfaces with as much fine salt as will cling with careful handling, using about 1 pound of salt to 5 pounds of fish. Pack the fish in a deep vessel and store in as cool a place as possible for 4 to 6 hours. The brine formed and any excess salt should then be rinsed from the fish which should be wiped dry and again kept as cool as possible until used, preferably within two days.

Boiled corned fish

This breakfast dish, popular with many commercial fishermen, is easily prepared. Place the fish in cold water and heat to the simmering point. Drain off the water and repeat, cooking the fish until tender; then season with pepper and butter if available. Corned fish is generally served with unsalted boiled potatoes.

Creamed corned fish

Prepare the corned fish flakes as above, separating the meat from the skin and ALL bones. Prepare a white sauce as described on page 7 (omitting salt); add the fish flakes, and heat.

Corned fish cakes

3 cups flakes prepared from boiled corned fish of a lean white meated variety
3 cups finely diced boiled potatoes
3 eggs beaten
1 tablespoon butter or cooking oil
1/4 teaspoon pepper
Flour

Break the flakes in small pieces, remove bones, and mix with the potatoes and eggs. Heat the butter (or oil), add pepper and mix thoroughly with other ingredients. Form into flat cakes not over 1-inch thick, cover these with flour and fry in cooking oil. If desired, add 1/4 to 1/2 cup finely chopped onions.

Corned fish stew

3 cups of cooked flakes prepared from boiled corned fish of a lean white-meated variety, carefully boned
1-1/2 cup dried lima beans
1 quart milk (heated)
1 tablespoon butter (or cooking oil)
2 tablespoons grated onion
1/8 teaspoon pepper

Soak the beans overnight and then boil them until tender and little water remains. Stir the fish flakes into the beans without breaking the latter; add the heated milk and stir in the butter and pepper.

Crawfish

This small crustacean is widely distributed in streams and ponds throughout the country. The edible meat is in the tail, with some in the claws. Remove the sand vein by breaking off the extreme end of the tail and drawing out the vein. Make a salt solution allowing 1/4 pound salt for each quart of water and in this boil the crawfish until red. This should take about 5 minutes. Remove the edible meat from tail and claws. This may be eaten hot with melted butter, vinegar, or other desired seasonings, or cold in salads.

Shrimp

Along the Gulf coast and in some of the rivers, shrimp may often be taken by small nets. The edible meat is in the tail; break off this segment, discarding the remainder of the animal. Peel the meat by breaking the under shell and opening from front to back. Remove the dark sand vein from the center-back of each shrimp and wash the meats in cold water.

Boil a salt solution, allowing 3 tablespoons salt to each quart of water, and add the shrimp to the boiling water. Cook for 6 to 10 minutes or until the shrimp are tender. Shrimp may be eaten hot or cold with desired seasonings or may be creamed, or used in salads.

Frog legs

Skin the legs and separate them from the feet and body which are discarded. Soak the legs for one hour in cold water, to each quart of which 3 tablespoons vinegar are added. Prepare flour and seasoning by mixing 1 cup flour, 1-1/3 tablespoon salt and 1/4 teaspoon pepper. After the frog legs have soaked in the acidulated water for an hour, drain them and wipe dry. Roll them in the flour mixture and fry in cooking oil at moderate heat.

Crabs

The blue crab is the most widely distributed of the several varieties of these crustaceans. The following details apply to this particular variety but with slight modifications may guide the camper in purchasing the other kinds. Only live crabs should be cooked. The live, blue, hard crab should be handled with caution as it can pinch severely.

Hard-shell crabs

Prepare a boiling solution made up in the proportion of 1 quart water, 1/8 cup vinegar, 1 tablespoon salt, 1/2 tablespoon red pepper. While this is heating, scrub and rinse the crabs. Boil them for 5 minutes and simmer 10 minutes longer. Pull off the legs and claws. Split these and remove the meat. Break off the segment that folds under the body from the rear. Holding the body of the crab in the left hand, back toward you, pull off the top shell. Remove the digestive tract and rinse in water. Split the crab and remove the hard membrane that covers the body meat with a nut pick or similar tool.

Soft-shell crabs

These are crabs that have shed their old hard shells and are about to form new ones.

To dress: cut off the apron that folds under the rear of the body; then, cut off the head to a point about 1/2-inch in rear of the eyes and remove all of the gills. Wash the crab thoroughly. In a kettle or deep frying pan put enough cooking oil to half cover a single layer of crab. Heat the oil until hot but not smoking. Prepare a salt solution made in the proportion of 2 tablespoons salt in 1 cup water. Soak the crabs in this for 1-1/2 minutes, dry, and dust with 1 cup flour combined with 1/2 teaspoon pepper. Fry the crabs to a golden brown, turning them as required. The whole soft-shell crab is edible.

Clams

Campers on the Atlantic seacoast would ordinarily use only the soft shell clams, several varieties of which are found in sandy beaches and flats; on the Pacific coast, hard clams are often used in outdoor cookery.

After gathering, the clams should be thoroughly washed in fresh water to remove sand. If time allows, place the clams in clean salt water in a shallow pan for about 3 hours before using, sprinkling a handful of corn meal over them. They will ingest this and work out sand which may be in the shell. Only live clams with shells tightly held together should be cooked. Any gaping clams should be discarded.

Clam bake

1-1/4 pecks clams (in the shell)
1 dozen ears sweet corn
1/2 peck sweet potatoes (or small white potatoes)
1 pound butter

In addition to the clams, sweet corn, and potatoes, frankfurters, and lobsters, other seafood may be used. The corn is cooked without removal of the inner layer of husks.

Build a rock platform about 4 feet square and 8 to 10 inches deep; provide plenty of fire-wood and about 4 bushels of wet rock or sea weed; avoid old or dead weed as this will impart a bad flavor to the food. Build a fire to cover the rock platform and continue adding fuel for 1 to 2 hours until the stones are thoroughly heated and a good bed of embers is formed. Remove any smoking pieces of wood and cover the rocks and embers with at least 4 inches of wet rock weed. Without loss of time, spread out the food on the bed of weed and cover with 4 inches more of the weed. Cover the whole with an old canvas so as to retain the steam that cooks the food. Keep covered for about 40 minutes or until the potatoes are cooked.

Along the seacoast the heating stones are sometimes placed in a hole scooped out of the sand to a depth of 12 to 18 inches. A layer of hot sand from around the fire may be used instead of canvas for covering the top layer of seaweed. Cheesecloth or similar light material is sometimes used to cover the food, being placed between it and the top layer of seaweed.

By eating near the cooking place, food may be kept covered and hot until used. The clams will open during the cooking. The loose cover around the neck of the clam should be removed. Using the dark neck as a handle, dip the clam into hot melted butter, bite it off, and discard the neck.

Sometimes lobster, chicken, and other foods cooked at the same time are used as supplements to the main dish.

Clam chowder

6 quarts soft clams (in the shell) or
3 quarts razor clams (in the shell)
3 cups sliced potatoes
2/3 cup sliced onions
2/3 cup salt pork (fat back), diced
3 tablespoons flour
1 quart milk
1 teaspoon salt
1/4 teaspoon pepper
1 pint water

Remove sand from clams and wash them as previously described. Put clams into a kettle, add the water and boil until clams open. Remove clams and save the water in a side dish. Shell the clams, remove stomach contents, cut off dark necks (including any loose cover) and rinse the bodies. Razor clams should be cut into 1-inch lengths. Put diced pork into kettle and fry brown. Add the sliced onions and cook to a golden yellow. Add the flour, sliced potatoes, seasoning, and clam liquor and mix well; cook until the potatoes are half done. Then, add the clams and continue cooking until the potatoes are soft. Add the milk which has been heated. Hard crackers may be added to the chowder immediately before serving. This is a New England style chowder; for Manhattan style, substitute 4 cups of stewed tomatoes for the quart of milk.

Oyster roast

About 1/2 bushel medium or large oysters in the shell
1 pound butter, melted
Salt and pepper

The oysters are washed and then roasted in a single layer for 10 to 15 minutes (or until shells open) on a sheet iron plate or grid placed over a clear wood fire. The larger half of the oyster shell should be placed downward. The hot meats are removed, dipped in hot melted butter, and seasoned as desired.

FISH COOKERY IN A CAMP OF 32 PEOPLE

A camp of more than a few people requires systematic organization, and since this subject is thoroughly described in several publications (see page 27), no repetition in this paper appears necessary. It is assumed that cooking will be in charge of a person with some experience, and that customary supplies and field equipment will be available.

Recipes in this group are designed to provide generous portions for 32 people. It is suggested that as far as possible, fish be prepared in cuts about 5/8-inch thick; many recipes are based upon fish prepared in this thickness, and should be adjusted if thinner or thicker cuts are used.

Frying

Any clean fat may be used for frying but butter is not favorable since it smokes and burns at a relatively low temperature. Fish should be cut into serving portions and dipped in some liquid, as milk, beaten eggs, or salted water, then, covered with flour, corn meal, or crumbs. It was ascertained as a result of tests at the former Bureau of Fisheries laboratory that a water dipping and crumbing of mixed salted corn meal and flour was preferred.

Pan frying

16 pounds fish fillets, or 24 pounds small fish (heads removed) either split or whole
1 quart medium fine corn meal
1 quart flour
5/8 cup salt
Cooking fat or oil
Water

Sift together the flour, corn meal, and salt. Dip fish in water and roll in the above crumbing mixture. Heat fat in frying pan and when hot but not smoking place a single layer of fish in the pan and cook for 5 minutes; then, turn fish and cook on the other side until done.

Deep fat frying

Prepare fish as above. Have plenty of fat in a deep kettle and heat to above 385° F. (at this heat, a piece of bread will brown in 20 to 25 seconds). Put a single layer of the fish into the fat (using a wire basket, if available), and cook to an even golden brown; this should take from 4 to 8 minutes.

Broiling

16 pounds fish fillets or 24 pounds small fish (drawn, and heads removed) either split or whole
1 pint cooking oil
2 tablespoons salt
1/3 teaspoon pepper

Wash the fish and wipe dry. Mix the cooking oil, salt, and pepper, and brush this over the fish. If a broiler is available and there is a good bed of live coals, the fish is placed skin side down on the well-oiled broiler and cooked for 5 minutes or until the skin is covered with brown bubbles; the fish is then turned and the flesh side similarly cooked. Baste while cooking. If fillets are used it is not necessary to turn them; cook skin side down until done.

In the absence of a broiler, the fish may be pan broiled using a dry frying pan at high heat. This method of cooking is especially applicable to fat fish.

Boiling

Lean fish are preferred for boiling.

Boiled fish with egg sauce

20 pounds dressed fish (not split)
5 tablespoons salt
2-1/3 cups vinegar
12 quarts water

Put the washed fish into a boiling-basket or wrap in cheesecloth; boil in a mixture of salt, vinegar, and water for 8 to 12 minutes. Serve hot with white sauce.

Prepare white sauce from the following:

4-1/2 quarts milk
1/2 pound butter or fortified margarine
1/2 pound flour
1 dozen chopped hard-boiled eggs

Melt the butter or margarine, add the flour, stir well; add the milk and cook until thick, stirring constantly. Fold in the chopped eggs and pour the mixture over the boiled fish.

Boiled fish with Spanish sauce

24 pounds dressed fish (not split)
5 tablespoons salt
2-1/2 cups vinegar
12 quarts water
2 No. 10 cans tomatoes
3 quarts sliced onions
2 tablespoons sugar
1-1/2 cups butter or fortified margarine

Put the washed fish into a boiling-basket or wrap in cheesecloth; boil gently in the mixture of salt, vinegar, and water only long enough to permit separating the fish flesh from bones and skin; the fish flesh should be kept in as large pieces as possible. Simmer the tomatoes and sliced onions until the latter are tender; then add the fish flesh which has been separated from skin and ALL bones; add butter and sugar. Simmer with minimum stirring, until the flavors are blended.

Baking whole fish

Fish weighing over 2 pounds should be selected for this method of cooking. Fat fishes are often preferred, but lean fish may be used if the skin is slashed across in several places.

24 pounds fish, cleaned and trimmed but not split
1 pound sliced bacon
Salt
Cooking oil
Stuffing

Prepare stuffing from the following:

6 quarts diced bread
1 cup finely chopped onion
3 tablespoons sage
1 tablespoon salt
2 teaspoons pepper
1 ounce celery seed
1 pound melted butter or fortified margarine
1-1/2 cups boiling water

Make the stuffing by mixing the bread, onions, and sage. Mix salt, pepper, celery seed, butter, and water. Add this mixture to the bread mixture, stir thoroughly, and cover for a few minutes. Wash the fish and soak for 5 minutes in salt water made up in the proportion of 1/2 cup salt to each quart of water. Drain fish and fill each with the prepared stuffing. Bind each fish with several turns of string to keep in stuffing. Brush fish with cooking oil. Spread half the bacon in a baking pan; place the fish on the bacon; spread the remainder of the bacon over the fish. Bake at a high heat for 10 minutes, then, at a more moderate heat for about 10 minutes longer.

Fish cakes

8 pounds (1 gallon) fish flakes
1 gallon boiled potatoes (hot if possible)
1 dozen eggs, beaten
1/3 cup butter melted or fortified margarine
2 cups or 1 pound grated onion
Salt
Pepper
Crumbing mixture or flour
Cooking oil, salt pork or other frying medium

Boiled or left-over fish may be used for flakes. The flesh, separated from skin and ALL the bones, should be coarsely chopped. Brown onion slightly in butter. The potatoes should be chopped, and then mixed with the fish, beaten eggs, onion, butter, and seasoning. The amount of the latter will depend upon the seasoning used in the original cooking of the fish, and the character of the cooking fat. Mold the mixture into cakes about 3/4-inch thick and 2-1/2 inches in diameter and chill, if possible. Roll the cakes in crumbs or flour and saute in frying-medium. The cakes may also be deep fried. For this method of cooking, the cakes should be crumbed and placed in a single layer in a frying basket. Cook to a golden brown in cooking oil heated to 385° F.

Creamed fish flakes

16 pounds (2 gallons) fish flakes
2-1/2 quarts medium white sauce
Seasoning

The fish flakes should be prepared from boiled fish (see page 14), after separation from the skin and ALL bones. The amount of seasoning will depend upon the original cooking of the fish. To the white sauce may be added chopped hard-boiled eggs, minced onions, grated cheese, minced green peppers, chopped mushrooms, or other suitable material.

Fish chowder

Large lean fishes with a minimum of bones are generally preferred for this dish.

15 pounds fish, cleaned, and trimmed but not split
2 quarts potatoes, peeled and sliced
1 quart sliced onions
1 pound diced salt pork (fat back)
15 tablespoons flour or 15/16 cup
1 teaspoon pepper
3 tablespoons salt
1-1/2 gallons water
2 gallons milk

In a heavy kettle, fry the diced pork to a golden brown. Add the flour and mix well. Place the potatoes and onions in alternate layers. Add the seasoning and water. Lay the fish in a boiling basket on top of the whole and simmer until the potatoes are cooked. Remove fish and separate the flesh from the skin and ALL the bones. Return the flesh to the kettle. Have the milk hot (but not boiled); pour it into the chowder and mix the whole with the minimum of stirring. Just before serving, add hard crackers.

This is a New England style chowder. One gallon or 1-1/3 No. 10 cans of evaporated milk, and 1 gallon of water may be substituted for 2 gallons of fresh milk. For Manhattan style chowder, substitute 2-2/3 No. 10 cans of stewed tomatoes for the milk.

Pinebark stew

This dish which is popular for picnics in the south and especially in South Carolina, is varied in composition; the following recipe prepared at the former Bureau of Fisheries laboratory is based on southern experience. A white meated fish that is firm when boiled is preferred; sunfish, bream, or bass are frequently used.

1 pound bacon
15 pounds white meated fish, dressed and split
5 pounds diced potatoes
1-1/2 pounds sliced onions
2 tablespoons curry powder
2 tablespoons salt
1 pound butter or fortified margarine
5 cups catsup
2 teaspoons black pepper
1 teaspoon red pepper
1 bottle Worchestershire sauce

A large Dutch Oven or heavy kettle and a large frying pan are desirable for cooking the stew. Mince the bacon and fry it dry in the kettle. Add the onion and cook to a golden yellow. Add the potatoes, salt, and 1 tablespoon curry powder; add just enough water to cover the potatoes, and simmer for about 20 minutes. Then add the split fish, mixing it with the potatoes and onions. Cook the whole for about 10 minutes or until the potatoes are soft.

While the fish is cooking, melt the butter or margarine in the frying pan and mix the other ingredients into the hot fat. Dip the liquor from the kettle into the frying pan and stir constantly. The result will be a rich barkcolored gravy or sauce. Serve large pieces of fish with the potatoes, on toast, or with rice, the gravy being poured over the portions as served.

Clams

For cleaning and preparing clams, see page 10.

Clam bake

2 bushels clams (in the shell)
6 dozen ears sweet corn (all but inside layer of husk removed)
3 pecks sweet potatoes (or small white potatoes)
Small lobsters and other foods may be added as desired
6 pounds butter

Prepare a platform about 20 feet long, 4 feet wide, and 8 to 10 inches deep from dry rocks; provide plenty of firewood and about 20 bushels of fresh wet rock weed; avoid dead or dry weed. Keep a brisk fire well spread over the rock platform for 1 to 2 hours or until it is well heated. Remove smoking wood. The food should be ready for cooking. Cover the hot stones and live embers at once with about 4 inches of wet rock weed, spread the food over this, then cover it with another 4-inch layer of wet rock weed. Over the whole, spread a heavy canvas or similar cover to hold in the steam. Allow the food to cook for about 40 minutes or until the potatoes are soft. By eating near the cooking place, food may be kept covered and hot until used. The clams will open during the cooking. The loose cover around the neck of the clam should be removed. Using the dark neck as a handle, dip the clam into hot melted butter, bite it off, and discard the neck.

Clam chowder

1 bushel soft clams (in the shell) or 1/2 bushel razor clams (in the shell)
3 quarts potatoes, peeled and sliced
1 quart sliced onions
1 pound diced salt pork (fat back)
1 cup flour
1 teaspoon pepper
3 teaspoons salt
1-1/2 gallon water
2 gallons milk

Prepare as directed on page 11.

Oyster roast

Three bushels or more of medium or large oysters, and about 5 pounds of butter should be provided. The cooking is the same as described on page 12.

FISH COOKERY IN A CAMP OF 100 PEOPLE

What has been said of a camp of 32 people (page 12) will apply in general to larger camps, still greater attention being required to organization and management. Excepting for picnics and in other cooperative gatherings, professional stewards and cooks are essential.

Frying

Deep-fat cooking is almost necessary. A proper supply of deep pans and cooking baskets should be provided. Any clean fat may be used. A suitable cooking thermometer will be useful as an aid in producing uniformly good food.

50 pounds fillets or steaks about 5/8-inch thick and cut into portions of about 1/2 pound each, or 100 small fish weighing about 3/4 pound each after scales, viscera, and heads have been removed
1-1/2 cups salt
3-1/2 quarts flour
3-1/2 quarts medium fine corn meal
Water

Sift together the flour, corn meal, and salt. Dip fish in water and roll in the above crumbing mixture. Heat fat to about 385° F. If no thermometer is available, test with a bit of bread which should brown in 20 to 25 seconds. Put a single layer of fish in the basket and cook to an even golden brown. This should take from 4 to 8 minutes.

Boiling

Lean fish are preferred for boiling.

Boiled fish with egg sauce

65 pounds dressed fish (not split)
1 cup salt
2 quarts vinegar
10 gallons water

Put the washed fish into a boiling-basket; boil in the mixture of salt, vinegar, and water for 8 to 12 minutes. Separate the fish flesh from skin and ALL bones; serve the flesh in large pieces with a white sauce made from 11-1/4 quarts milk, 1-1/4 pound butter or fortified margarine, 1-1/4 pounds flour, and 2-1/2 dozen chopped hard boiled eggs.

Boiled fish with Spanish sauce

65 pounds dressed fish (not split)
1 cup salt
2 quarts vinegar
10 gallons water

Boil fish as in the foregoing recipe only long enough to allow the flesh to be separated from bones and skin. Break the flesh into coarse flakes.

Prepare Spanish sauce from the following:

5 No. 10 cans tomatoes
7 quarts sliced onions
6 tablespoons salt
2-1/2 tablespoons pepper
3 cups butter or fortified margarine
6 tablespoons sugar

Combine ingredients and boil gently until the onions are almost cooked. Then add the fish and simmer a few minutes.

Fish chowder

Large lean fish with a minimum of bones is generally preferred for this dish.

45 pounds fish, cleaned, and trimmed but not split
9 quarts potatoes, peeled and sliced
3 quarts sliced onions
3 pounds diced salt pork (fat back)
2-3/4 cups flour
3 teaspoons pepper
5/8 cup salt
3 gallons water
6 gallons milk

In a heavy kettle, fry the diced pork to a golden brown. Add the flour and blend. Place the potatoes and onions in alternate layers. Add the seasoning and water. Lay the fish in a boiling-basket on top of the whole and simmer until the potatoes are cooked. Remove fish and separate the flesh from the skin and ALL the bones. Return the flesh to the kettle. Have the milk hot (but not boiled); pour it into the chowder and mix the whole with the minimum of stirring. Just before serving, add hard crackers.

Fish cakes

24 pounds (3 gallons) fish flakes
3 gallons boiled potatoes (hot if possible)
3 dozen eggs, beaten.

1 cup butter, melted, or fortified margarine
3 pounds or 6 cups grated onion
Salt
Pepper
Crumbing mixture
Cooking oil

Boiled fish (see page 18) may be used for flakes. The flesh separated from skin and all the bones, should be coarsely chopped. Brown onions slightly in butter or margarine. The potatoes should be chopped, and mixed with the fish, beaten eggs, butter, onions, and seasoning. The amount of the latter will depend upon the original cooking of the fish. Mold the mixture into cakes about 3/4 inch thick and 2-1/2 inches in diameter, and chill if possible. Roll the cakes in crumbs and place in a single layer in a frying-basket. Cook to a golden brown in oil heated to 385° F. or saute in shallow frying pan in a small amount of fat.

Creamed fish flakes

50 pounds (about 6 gallons) fish flakes
2 gallons medium white sauce
Seasoning

The fish flakes should be prepared from boiled fish (see page 18) after separation from skin and ALL the bones. The amount of seasoning will depend upon the original cooking of the fish. To the white sauce may be added chopped hard boiled eggs, minced onions, grated cheese, minced green peppers, chopped mushrooms, or other suitable material.

Pinebark stew

See page 16.

3 pounds bacon
45 pounds white meated fish, dressed and split
4-1/2 pounds sliced onions
15 pounds diced potatoes
6 tablespoons curry powder
6 teaspoons salt
3 pounds butter or fortified margarine
1 gallon catsup
1-1/2 tablespoon black pepper
3 teaspoons red pepper
3 bottles Worchestershire sauce

The stew is prepared as described on page 17, the bacon, onions, potatoes, salt, fish, and half the curry powder being cooked in a heavy kettle, as directed. The remaining ingredients are prepared in a large pan, and liquor from the kettle is added in the preparation of the sauce.

Clams

For cleaning and preparing clams, see pages 10 and 11.

Clam bake

6 bushels clams (in the shell)
16 dozen ears sweet corn (all but inside layers of husks removed)
2 bushels sweet potatoes (or small white potatoes)
Small lobsters and other foods may be added as desired

Prepare a dry (wet rocks may "explode") rock platform about 60 feet long, 4 feet wide, and 8 to 10 inches deep; provide plenty of firewood and about 60 bushels of fresh wet rock weed; avoid dead or dry weed. Keep a brisk fire well spread over the rock platform for 1 to 2 hours or until it is well heated. Remove smoking wood. The food should be ready for cooking.

Cover the hot stones and live embers with about 4 inches of the wet rock weed; spread the food over this and cover with another 4-inch layer of wet rock weed. Over the whole spread a canvas or similar cover to hold in the steam. Allow the food to cook about 40 minutes or until the potatoes are soft.

By eating near the cooking place, food may be kept covered and hot until used. The clams will open during the cooking. The loose cover around the neck of the clam should be removed. Using the dark neck as a handle, dip the clam into hot melted butter, bite it off, and discard the neck. About 3 pounds of butter to each bushel of unshucked clams will be required for melting.

Clam chowder

3 bushels of soft clams (in the shell) or 1-1/2 bushels razor clams
9 quarts potatoes, peeled and sliced
3 quarts sliced onions
3 pounds diced salt pork (fat back)
3 teaspoons pepper
1/2 cup salt
3 gallons water
6 gallons milk

To use evaporated milk instead of fresh milk use 3 gallons milk or 4 No. 10 tins of evaporated milk plus an equal quantity of water.

Prepare as directed on page 11.

This recipe is for New England style chowder; for Manhattan style use 8 No. 10 cans of stewed tomatoes instead of the 6 gallons of milk.

Oyster roast

Nine bushels or more of medium or large oysters and about 15 pounds of butter should be provided. The cooking is the same as that described in 12.

APPENDIX

THE SMALL FISHING CAMP

Selection of Equipment and Supplies

Details depend upon the degree of mobility desired, and also upon the requirements and tastes of individuals. Certain items of equipment for a summer camp of six people to be maintained in one place for two weeks will be described. This may be modified as required for one-night camps or for semi-permanent summer homes.

Anyone who has experienced a lengthy storm while living under canvas appreciates that the most important camp equipment is a good tent properly pitched. A wall tent of 10-ounce canvas, provided with a rear-wall screened-ventilator having a flap cover and, if necessary, with a mosquito netting for the front, will be found satisfactory to most people.

Details for securing the tent may be somewhat varied. One method is to suspend the tent on a rope under the ridge, extending about 12 feet in both directions. It is suggested that the rope be of 3/4-inch braided cotton since, when wet, this will shrink less than manila. A light-stranded galvanized-iron cable provides an absolutely non-shrinkable ridge rope; if wound with old cloth where it passes under the canvas, no unusual wear on the tent will result. If campers desire a clear space before the tent, an extra 12 feet of 3/4-inch rope will be required.

Some campers place a fly over the tent: this will keep the tent much cooler, especially in hot sun. A fly to be placed in front of the tent will be found very desirable in any camp, especially for shelter during rainy weather. It will require additional ridge rope. Any guy ropes should be of braided cotton; metal tent pins are an advisable provision for ordinary tent pitching. Tent poles will have to be provided for use in a locality where there are no small trees.

An alternate method of holding a tent erect is by tent poles which may generally be improvised at the camp site. If these are to be used, a ridge pole is necessary but no ridge rope will be required; however, extra light braided cotton rope should be available. A piece of canvas at least 6 feet square, with guy ropes, should be provided for protecting the cooking fire during rain. If camp cots are not used, a canvas to cover the tent floor should be provided. It is good practice to pack all canvas in heavy sea bags.

Cooking utensils should be of light pressed steel with no projecting or soldered parts. The frying pan, which is essential, should have a folding or detachable handle. Assembled utensils, constructed so that they may be nested when packed, are available in many stores. Cups should be of enameled ware since metal transmits too much heat.

A folding grid will be found very useful for the cooking fire. An alternate utensil is two or four light cast-iron bars about 15 inches long, to be placed across small green logs. A fireless cooker (with heater stone) will allow for varied cooking and greater freedom for the cook. It will be found more satisfactory than improvised devices.

Food supplies should be as light as possible, avoiding canned goods if satisfactory dehydrated substitutes are available. Provision should be made for metal water-tight containers for sugar, salt, and especially matches.

The following equipment may be found useful in the camp:

Axe
Camp shovel
Light hatchet
Steel knife sharpener
Needles and thread
Large safety pins
Nails
Heavy cord
Vacuum bottle
Light galvanized wire
Flash light
Rope

First-aid kit, with simple medicines, including sunburn and mosquito lotions
White adhesive tape, inch wide, for mending
A water pail of generous size, with cover
A gasoline stove and a gasoline or kerosene lantern

Unless it is known in advance that cool spring water will be available for keeping perishable food, it is advisable to provide a metal can with removable cover, a pan of about the same width, and a burlap or other coarse mesh bag large enough to cover both with several inches extra length. Evaporation from this cover when wet keeps the container cool.

Food, small cooking utensils, and many supplies may be packed in kettles and pails and shipped in substantial, tight, wood boxes about 18 inches high, provided with hinged covers and rope handles. These will provide convenient seats and storage boxes in camp.

For bedding, each individual should provide a pillow case of heavy unbleached cotton and a warm bed-roll, including a sheet or quilt for light covering, and one or more wool blankets for the coldest nights that may be expected. An air mattress is very desirable. These should be carried with other personal property in a sea- or duffle-bag. Camp clothing should be of wool in cool climates and should include a wide felt hat and heavy socks and shoes; a raincoat may provide comfort and hip rubber boots are almost essential for certain types of fishing.

Selection of a Camp Site

The camp should be located reasonably near a generous supply of good water, upon ground with good natural drainage and above any possibility of high water. While a tent may be pitched among trees, it should be where sun will strike it during a part of the day and a sunny clearing should be nearby; avoid pitching a tent under overhanging dead wood, or too close to a living tree, because of danger from lightning.

Making Camp

Establishment of the camp cannot be started too early in the day. The site for the tent (and fly) should be cleared of live vegetation and smoothed off. The front of the tent should face the east, if possible, and should be at a level slightly lower than the rear. If the tent is provided with a ridge rope, it may be fastened to two properly spaced trees; if the ridge rope is of manila, ties should be used that can be eased quickly during rain. The ridge rope should be supported at the front of the tent or between tent and fly with two forked saplings or two straight saplings lashed together, the lower ends of which are set into the ground at the front corners of the tent. If the tent is pitched in the open, forked or lashed saplings should be set similarly to those between tent and fly, one pair in rear of the tent and the other in front of the fly, the extensions of the ridge rope being anchored to the ground at convenient distances. If there is objection to the front anchor rope, it may be replaced by two ropes set at an angle sufficient to leave clear the front of the fly.

Guy ropes should be set so that the tent (and fly) will be stretched into shape without strain. If the ground is too sandy to hold tent pins, the guy ropes may be fastened to long stakes driven into the ground, or to logs, or to saplings anchored by long stakes or rocks.

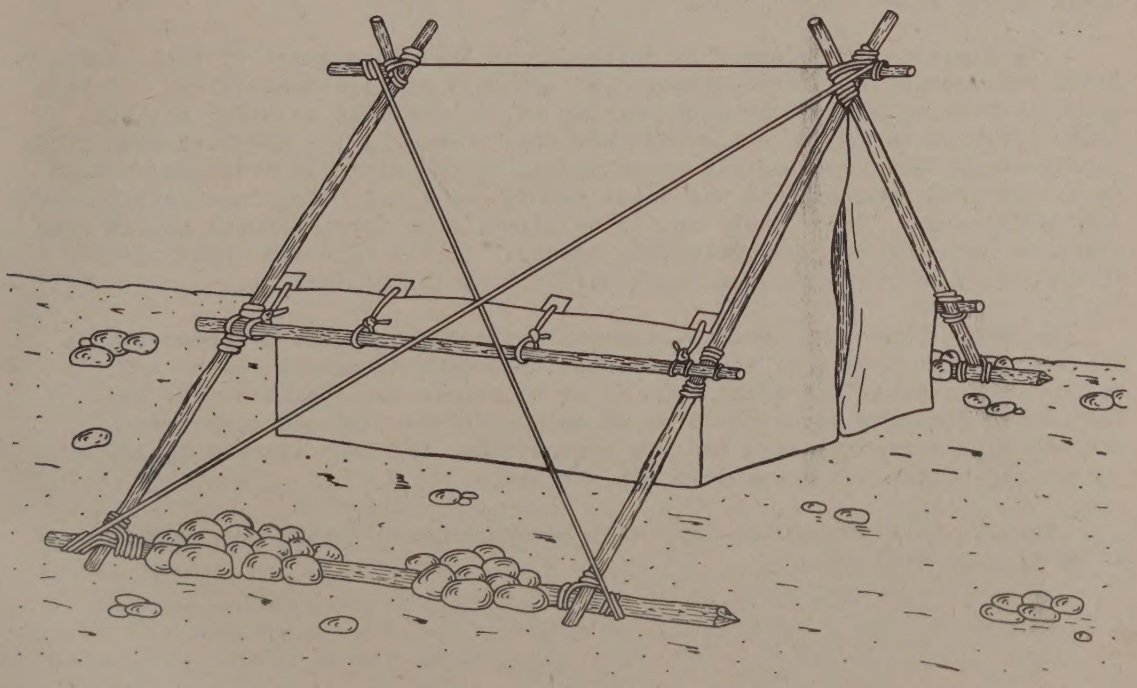

Figure 3. -- Tent pitched on rocky or sandy ground.

If the tent (and fly) is supported by a ridge pole, the latter may be prepared from a sapling, carefully trimmed and smoothed so that the canvas will be protected from cuts. The ridge pole should be supported in front and rear of the tent and in front of the fly by saplings lashed together and set parallel to the pitch of the tent. Cross saplings may be lashed to these just below the edges of sloping tops of the tent (and fly). With this arrangement, very short guy ropes are attached to the cross saplings. To protect the tent from high winds, it is well to provide guy ropes at the four corners of the tent (and fly).

An alternate method of bracing a tent held with poles is to extend guy ropes from each end of the ridge to the opposite corner support. The advantage of this construction is the absence of guy ropes in areas where campers might work. This method of tent pitching may be used on ground too rocky for holding tent pins. If desired, a fly can be placed over the tent.

To insure against a wet tent floor, a trench about 4 inches deep should be dug just outside the line of the tent wall on sides and rear, extending along the fly to points lower than the ground where the tent is placed.

If cots or air mattresses are not available, sprays of balsam, cedar, spruce, or other short-leafed evergreens should be spread to a depth of 8 inches over the ground under the tent, care being taken to avoid large branches. The canvas flooring may then be put into place and held by short ropes at the four corners.

For temporary hanging of clothing, a light sapling may be slung about 8 inches under the ridge rope or pole. Pillow cases should be filled with fine balsam or other evergreen, the open ends folded over and fastened with large safety pins.

The character of campers is reflected in the cleanliness of their camp. Waste and rubbish should be disposed of promptly and systematically. It is good practice to clean camp each morning while breakfast is being cooked. Combustible waste may be collected and later burned in the spent cooking fire. Incombustible but decomposible waste should be deposited in a shallow trench in a spot well removed from the water supply, each lot being immediately covered with earth. Other waste should be piled in an inconspicuous hollow some distance from the camp or preferably burned. If tin cans are first placed in a fire for several minutes, they will not attract flies.

On every clear day, bedding and extra clothing should be spread out in the sun. At intervals of about one week, the tent should be taken down during fair weather and spread out so as to expose the inside to the sun. The canvas flooring should also be aired and dried. The old evergreen bedding should be discarded and the ground under the tent allowed to dry thoroughly before new sprays are laid in place.

The fly in front of the tent will be appreciated during wet weather, especially at meal time.

A cool spring of pure water is a great asset to a camp. If necessary, build a small collecting basin of stones and clay after any vegetation is cleaned out and replaced by clean sand. If a muddy stream is the only water source, clear water may often be obtained by digging a pit in the bank and using the water that filters through the soil. If the purity of water is in doubt, it should be used only after boiling for five minutes.

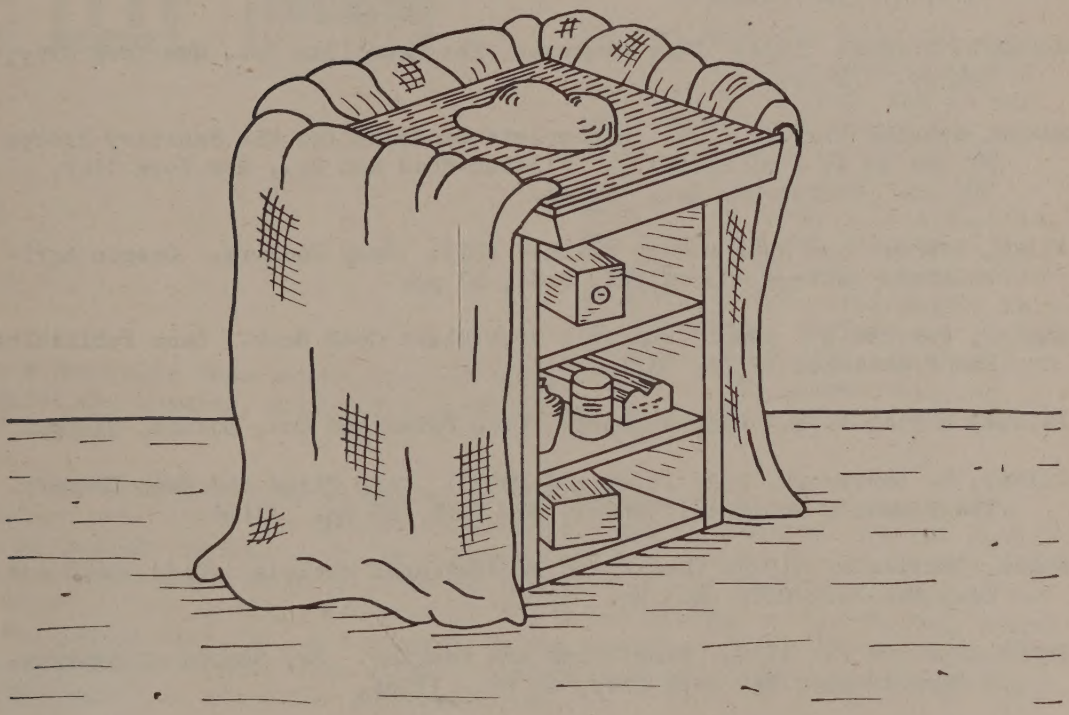

Figure 4. -- Burlap-covered refrigerator with front section removed to show method of construction.

It is advisable to have a minimum of perishable food on hand. If the overflow of a cool spring is available, food may be kept for a reasonable period in a shaded kettle set in the water. A substitute arrangement is to place the food in a covered, flat-topped can of about five gallons' capacity and over this, a metal pan of some depth. A wet burlap or other loose meshed bag is inverted over both, the cloth extending to the ground, with the bottom of the bag folding into the pan which should be kept half full of water; a stone of suitable size will keep the cloth under water. The whole should be placed in a shady, breezy spot.

LITERATURE DESCRIPTIVE OF CAMP LIFE

Anon. 1930. Cooking. Boy Scouts of America, 2 Park Avenue, New York City, 26 pp. Illus.

Carpenter, Warwick Stevens. 1913. Winter Camping. Outing Pub. Co., New York City, 164 pp. Illus.

Child, Alice M. 1928. Camp Cookery. Journal of Home Economics, Vol. 20, No. 5, 7 pp.

Kephart, Horace. 1921. Camping and Woodcraft. The Macmillan Co., New York City, 479 pp. Illus.

Kephart, Horace. 1931. Camp Cookery. The Macmillan Co., New York City, 154 pp. Illus.

Mason, Charles Field. 1918. A complete Handbook for the Sanitary Troops of the U. S. Army and Navy. William Wood and Co., New York City, 500 pp. Fourth Ed. Rev. Illus.

Milam, Ava B. and Ruth McNary Smith. 1913. Camp Cookery. Oregon Agricultural College, Corvallis, Ore., 47 pp.

Mugler, Charles M. 1934. Sunset's Grub Stake Cook Book. Lane Publishing Co., San Francisco, 72 pp. Illus.

Parloa, Maria, 1878. Camp Cookery. Dana Estes and Co., Boston, 91 pp.

Palmer, E. Lawrence. 1925 (1926 and 1927). Camp Fires and Camp Cookery. The Comstock Pub. Co., Ithaca, New York, 43 pp. Illus.

Smith, Charles F. 1924. Games and Recreational Methods. Dodd, Mead and Co., New York City, 463 pp. Illus.

Smith, Charles F. 1935. Camp Fires and Cooking. Boy Scouts of America, 2 Park Avenue, New York City, 42 pp. Illus.

Snyder, Gladys and C. Frances Loomis. 1934. The Outdoor Book. Camp Fire Outfitting Co., New York City, 127 pp. Illus.

The Quartermaster General U. S. A. The Army Cook. Government Printing Office, Washington, D. C., (recent edition).

Weir, L. H. and others. 1924. The Playground and Recreation Association of America. The Macmillan Company, New York City, 636 pp. Illus.

NOTE:--This Fishery Leaflet supersedes Special Memorandum 3215-A, issued by the former Bureau of Fisheries.